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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 739,739	12 20 2000	Masakazu Muroyama	SON-1968	4967

7590

08 06 2003

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Washington, DC 20036

EXAMINER

KEANEY, ELIZABETH MARIE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 08 06 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,739

Examiner

Elizabeth Gemmell

Applicant(s)

MUROYAMA ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-79 is/are pending in the application.
- 4a) Of the above claim(s) 14-73 and 77-79 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7, 10, 11 and 74-76 is/are rejected.
- 7) ☐ Claim(s) 8, 9, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 20 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Receipt is acknowledged of the Amendment filed 12 May 2003.

Election/Restrictions

Applicant's election of Group I in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). The restriction is therefore deemed proper and made FINAL. Claims 14-73 and 77-79 are withdrawn from further consideration.

This application contains claims 14-73 and 77-79 drawn to an invention nonelected with traverse in Paper No. 8. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1,5-7,10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. (US Patent 5,828,163; hereinafter Jones).

Re claim 1: Jones discloses, in figure 4 and throughout the disclosure, an electron emission device comprising:

- a conductive layer with a carbon film selective-growth region formed on a surface thereof (138);
 - wherein the carbon film selective-growth region is a portion of the conductive layer onto which at least one of metal particles, metal thin layer and organometallic compound thin layer adhere (column 7, lines 10+);
- an electron emitting portion composed of a carbon film formed on the carbon film selective growth region (30).

Re claim 5: Jones discloses, in figure 4 and throughout the disclosure, a cold cathode field emission device comprising:

- a cathode electrode (122) formed on a supporting substrate (121);
- a first gate electrode formed above a first portion of the cathode electrode (124, the gate electrode on the right);
- a second gate electrode formed above a second portion of the cathode electrode (124, the gate electrode on the left), the second portion of the cathode electrode separated from the first portion of the cathode electrode by a third portion of the cathode electrode;
- a first opening portion between the first gate electrode and the second gate electrode;
- a carbon film selective-growth region formed at least on a surface of the third portion of the cathode electrode (138);

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- an electron emitting portion having a carbon film formed on the carbon film selective-growth region (30).

Re claim 6: Jones discloses the carbon film selective-growth region is that portion of the cathode electrode onto the surface of which portion metal particles adhere, or that portion of the cathode electrode on the surface of which portion a metal thin layer or an organometallic compound thin layer is formed (column 7, lines 10+).

Re claim 7: Jones discloses the metal particles composed of chromium (column 7, line 10).

Re claim 10: Jones discloses the organometallic compound thin layer composed of a complex compound (column 7, lines 10+).

Re claim 11: Jones discloses, in figure 4 and throughout the disclosure, the cold cathode field emission device further comprising:

- a first insulating layer on the supporting substrate and the first portion of the cathode electrode (147, the insulating layer under the gate electrode on the right), the first insulating layer situated at least between the first gate electrode and the first portion of the cathode electrode;

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- a second insulating layer on the supporting substrate and the second portion of the cathode electrode (147, the insulating layer under the gate electrode on the left), the second insulating layer situated at least between the second gate electrode and the second portion of the cathode electrode;
- a second opening portion between the first insulating layer and the second insulating layer, the second opening portion communicating with the first opening portion formed between the first and second gate electrodes, and
- the carbon film is positioned in a bottom portion of the second opening portion (30).

Claims 2-4 and 74-76 remain rejected under 35 U.S.C. 102(b) as being anticipated by Debe (US Patent 5,726,524).

Re claim 2: Debe discloses, in figure 3b and throughout the disclosure, a cold cathode field emission device comprising:

- a cathode electrode (40) formed on a supporting substrate (41);
- a first gate electrode formed above a first portion of the cathode electrode (34; the gate electrode to the far right);
- a second gate electrode formed above a second portion of the cathode electrode (34; the gate electrode in the middle), the second portion of the cathode electrode separated from the first portion of the cathode electrode

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by a third portion of the cathode electrode (the portion of the cathode below the carbon film 38);

- a first opening portion between the first gate electrode and the second gate electrode;
- an electron emitting portion having a carbon film formed on a surface of the third portion of the cathode electrode (38).

Re claim 3: Debe discloses the cathode electrode composed of copper (column 9, lines 35+).

Re claim 4: Debe discloses, in figure 3b and throughout the disclosure, the cold cathode field emission device further comprising:

- a first insulating layer on the supporting substrate and the first portion of the cathode electrode (36, the insulating layer on the far right), the first insulating layer situated at least between the first gate electrode and the first portion of the cathode electrode;
- a second insulating layer on the supporting substrate and the second portion of the cathode electrode (36, the insulating layer in the middle), the second insulating layer situated at least between the second gate electrode and the second portion of the cathode electrode;

- a second opening porting between the first insulating layer and the second insulating layer, the second opening layer communicating with the first opening portion formed between the first and second gate electrodes.

Re claims 74-76: Debe discloses, in figure 3b and throughout the disclosure, a cold cathode field emission display comprising a plurality of pixels, each fixed comprising a cold cathode field emission device, an anode electrode (42) and a fluorescent layer (50), the anode electrode and the fluorescent layer being formed on a substrate (46) so as to be opposed to the cold cathode field emission device, and the cold cathode field emission device comprising:

- a conductive layer (40) with a carbon film selective-growth region formed on a surface thereof, and
- an electron emitting portion composed of a carbon film formed on the carbon film selective-growth region (38).

Allowable Subject Matter

Claims 8,9,12 and 13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The best prior art of record discloses a cold cathode field emission device

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comprising a cathode electrode, a first and second gate electrode, a carbon film selective-growth region and an electron emitting portion. However, the prior art fails to teach or fairly suggest, the carbon selective-growth region having sulfure, boron or phosphorous adhering thereto as claimed in claim 8.

The prior art of record also fails to teach or fairly suggest discloses a cold cathode field emission device comprising a cathode electrode, a first and second gate electrode, a carbon film selective-growth region and an electron emitting portion, wherein the carbon film selective-growth region is an organometallic compound containing an element selected from the group consisting of zinc, tin, aluminum, lead, nickel, and cobalt as claimed in claim 9.

The prior art of record further fails to teach or fairly suggest discloses a cold cathode field emission device comprising a cathode electrode, a first and second gate electrode, a carbon film selective-growth region and an electron emitting portion, wherein the metal particles adhering onto the surface of the cathode have an acicular form as claimed in claim 12. Claim 13 is allowable by virtue of its dependency.

Response to Arguments

Applicant's arguments with respect to claims 1-13 and 74-76 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant has argued that Debe does not teach a carbon film selective growth region defined as "a portion of the conductive layer or the cathode electrode

onto a surface of which portion metal particles adhere, or that portion of the conductive layer or the cathode electrode on a surface of which portion a thin metal layer or an organometallic compound thin layer is formed."

The Examiner respectfully disagrees with this argument. The definition of a carbon film selective growth region can only be found in the specification. *In re Prater* states: "Limitations appearing in the specification but not recited in the claim are not to be read into the claims". The limitations the Applicant argues Debe fails to disclose are not found within the claims and are therefore not interpreted as such. The Examiner has interpreted the region in which the carbon electron emitting portion converge the "carbon film selective-growth region".

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US Patent 6,133,678 discloses a field emission element having a carbon growth region.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

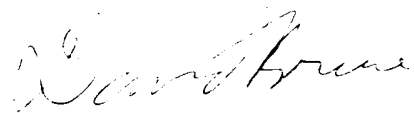
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

emg

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July 27, 2003



DAVID V. BRUCE
PRIMARY EXAMINER